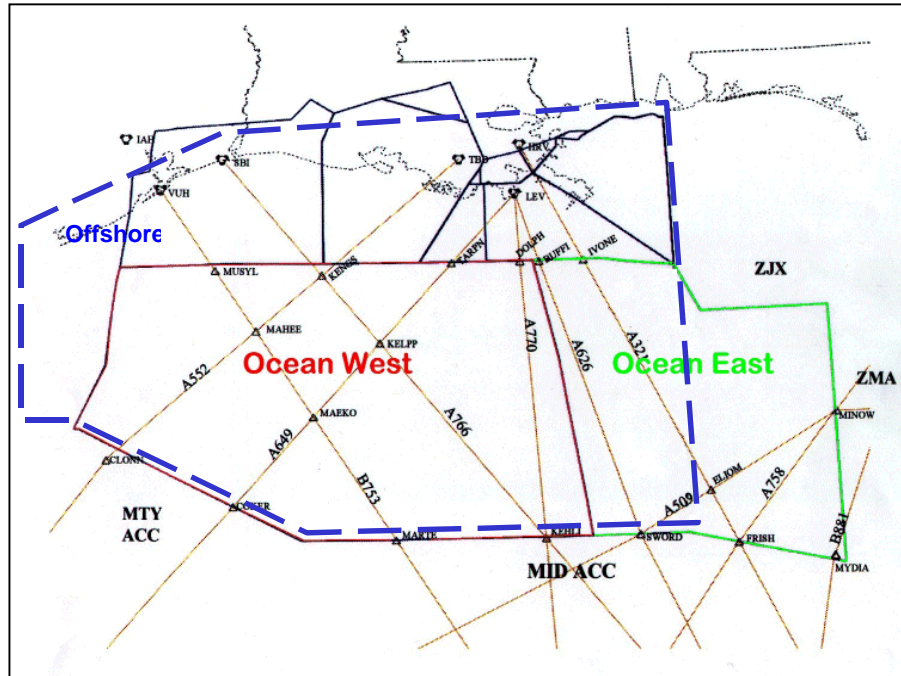


ER-5: Reduce Offshore Separation

Provide communication, navigation, and surveillance services similar to domestic en route airspace.



Background

The National Airspace System (NAS) contains a significant amount of airspace that lacks surveillance coverage. Most notable is the portion contained in the Gulf of Mexico airspace, which is part of the ICAO Caribbean/South American region. An area of approximately 60,000 square miles (roughly the size of the State of Tennessee) in the Central Gulf of Mexico currently lacks all but the most basic Communications/Navigation/Surveillance (CNS) components. Separation assurance in these areas is provided through the use of non-radar procedures, which employ cumbersome and inefficient separation standards.

In the Gulf of Mexico, there are two major user communities: the high altitude users and the offshore users. The background of each user group and their operational environment is described below.

High Altitude:

Demand for the limited number of available slots along the oceanic routes that cross the Gulf has been growing at double digit rates. The surveillance and communication gap over the central Gulf is approximately 400 miles (east-west) by 150 miles (north-south). The use of *procedural oceanic separation* standards is required for any aircraft that flies through this airspace. Recent procedural enhancements have increased the capacity from approximately 45 operations/hr to 60 operations/hr, but this additional capacity has already been absorbed by demand. Peak demand currently exceeds capacity for 1.5 hours per day; demand will exceed capacity for 6

hours per day by 2002. By 2005, demand will exceed capacity for 11 hours per day. The anticipated sharp increase in the number of flights between North America and Cuba will exacerbate the situation.

Offshore:

Helicopter flights in support of oil exploration/production are the main offshore users. The revenue associated with Gulf oil production and fishing industries account for approximately 3% of the United States Gross Domestic Product. There are 899 named oil fields with over 5000 landing sites on the oil exploration areas off the coast of Louisiana and Texas, accessed mainly by a fleet of some 610 helicopters. 50% of the world's offshore helicopter traffic occurs every day in the Gulf. There is an average of about 5000 flights per day, with peak traffic of about 9000 flights per day on shift change days. Most of these flights operate VFR. However, on the approximately 100 days per year that inclement weather affects the Gulf, severe restrictions must be applied by ATC. Due to a lack of low altitude communications and navigation infrastructure, current IFR capacity is only 120 operations per day. Demand for air traffic services is expected to grow, as oil exploration and production push further out into the Gulf, and the number of deep water platforms grow. The planned introduction of long range tilt-rotor aircraft into the Gulf will only add complexity to the operating environment.

Ops Change Description

Gulf of Mexico operations will be changed to allow the use of domestic en route standards and procedures. These standards and procedures will be supported by the provision of surveillance and direct controller-pilot voice communication coverage across all required Gulf airspace. Appropriate CNS enhancements should be provided for the high altitude users (FL290 and above across whole Gulf) and for the offshore users (above 1500 feet in the oil exploration and production areas). Improved weather products should be made available to the ZHU controllers, airline operations centers, pilots, and other users.

This change will require surveillance and communications capabilities to provide sufficient coverage of the Gulf to support en route-type operations; sufficient automation capability to support the surveillance improvements; wholesale redesign of the airspace into en route sectors, and displays, staffing and training to support those sectors; development and implementation of en route procedures to support all of the above. These changes must be coordinated with ICAO, and the surrounding centers (ZJX, ZMA, Mexico's MID and MTY), so traffic flows within these new Gulf sectors can be handled smoothly. The users must be notified of the changes, any necessary training completed, and any equipment requirements coordinated.

Benefits, Performance and Metrics

- Capacity of the high altitude airspace will increase significantly: oceanic procedural (30/hr) to domestic en route (80-100/hr).
- En route delays will decrease.
- Use of customer preferred flight trajectories are expected to increase.
- Ground hold delays will decrease.

- On-time departure rates will increase.
- Offshore planning is expected to be enhanced; elimination or reduction of “one-in one-out” flow restriction at non-radar terminals.
- En route flight stage lengths will decrease, as more aircraft fly their requested altitudes.
- Safety will be enhanced.

Scope and Applicability

Gulf of Mexico Working Group (GOMWG). The FAA is progressing on a number of initiatives proposed by the GOMWG to enhance air traffic management in the area. (The GOMWG is a joint FAA/Industry working group that includes representatives from all major GOMEX user groups, as well as representatives from the civil aviation authority of Mexico).

Major Initiatives:

- RNAV Routes. In September 2001, two parallel RNAV routes will be introduced to replace Jet Routes 58 and 86. (J58/86 are based on ground navigation aids). Track spacing will be 18 nautical miles. These routes will require that aircraft be equipped with approved RNAV systems and operate within the system limitations. Direct VHF pilot-controller communications are available and the routes are normally under radar surveillance.
- RNAV Route Expansion. The FAA has established a program to analyze key safety parameters to determine how the application of 18nm track spacing can be expanded to areas of the Gulf that are not under radar surveillance.
- Enhanced Surveillance. The FAA is working with industry to determine if a combination of radar and ADS-B surveillance can be introduced in the Gulf. The introduction of surveillance into non-radar airspace will enable further reductions in aircraft separation. The Investment Analysis to prioritize the options for surveillance systems will be completed in October 2001.
- Communication. The FAA has sponsored the placement of remote VHF transmitter/receivers on three buoys in the Gulf. One prototype buoy is currently deployed in the central Gulf, supplementing VHF controller-pilot communication down to FL280. A second buoy is currently undergoing operational testing. A third buoy will be deployed in fall 2001. Enhanced communication is a key element of air traffic management and safe separation of aircraft. The combination of the buoys and current onshore systems should allow direct pilot/controller communications down to FL180 across most of the FAA’s Gulf airspace.
- Reduced Vertical Separation Minimum (RVSM). The GOMWG is coordinating with FAA specialists that are planning RVSM implementation in domestic US airspace with the intent of implementing RVSM in the Gulf on or near the same timeframe.

These initiatives to enhance communication, navigation, and surveillance capabilities will allow for reduced separation standards, while providing parallel benefits to air traffic flow management and increasing airspace capacity and operating performance. The specific

decisions on enhanced CNS and other automation are interdependent, and must be treated and assessed as a whole with full awareness of operational and investment tradeoffs for alternatives.

Key Decisions

- Consensus must be reached that the benefits of Gulf CNS improvements outweigh related operator costs for equipage.

Key Risks

- Trade-off between service provision and equipage alternatives. Different alternatives place different investment requirements on both the FAA and different user groups.
- User equipage.
- Development of plans for approval of large numbers of diverse aircraft types and operators.
- Introduction of exclusionary airspace requires extensive rule making action.